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10/644,154

08/20/2003

Akihiro Maezawa

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07/13/2005

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EXAMINER

MALEVIC, DJURA

ART UNIT

PAPER NUMBER

2878

DATE MAILED: 07/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/644,154

Applicant(s)

MAEZAWA ET AL.

Examiner

Djura Malevic

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 8/20/2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-9, and 11-19 are rejected under 35 U.S.C. 103(a) as being obvious over Isoda (US Pub. 2003/00364458) in view of Struye et al. (US Pub. 2004/0026632) and in further view of Chen et al. (US Patent 6,396,066).

Regarding claims 1, 7 – 8, 11, and 17 – 18, Isoda discloses a method of and a radiation image-converting panel comprising a substrate (support) (Page 3., Par 43), a phosphor layer having thereon a stimulable phosphor (Page 23, Par. 42), which is formed by electron beam deposition, wherein the electron beam is used to heat the evaporation source (vapor deposition) (Page 3, Par. 44), so that the stimulable phosphor layer exhibits a thickness of 100  $\mu\text{m}$  to 1mm, which is within the recited range claimed by the applicant, 50  $\mu\text{m}$  to 20mm.

Isoda does not disclose the support exhibiting a thermal conductivity of 0.1 to  $\text{Wm}^{-1}\text{K}^{-1}$ .

Struye discloses that preferred supports for a phosphor screens (panels) are selected from the group consisting of ceramics, glass, polymeric film and amorphous carbon (Page 3., Par 33). Struye further teaches that of the polymeric films, especially heat stable polyester films, polyethylene terephthalate is preferred as a support (Page

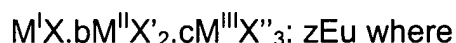
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3., Par 33). The thermal conductivity of polyethylene terephthalate film at 23C is  $0.13 - 0.15 \text{ Wm}^{-1}\text{K}^{-1}$ , which is within the recited range claimed by the applicant,  $0.1 - 20.0 \text{ Wm}^{-1}\text{K}^{-1}$ .

Struye and Isoda are analogous art because they teach radiation image storage panels.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Isoda to include a support made of polyethylene terephthalate such as that taught by Struye for the reason that heat stable polyester films are preferred for vapor deposition.

Regarding claims 2 - 4 and 12 - 14, Isoda discloses the stimuable phosphor represented by the following formula, which is the same formula as the applicants by way of variables that convey the same entities (Page 2, Par. 18):



$\text{M}^{\text{I}}$  being at least one alkali metal element selected from the group consisting of Cs, Li, Na, K and Rb (Page 2, Par. 19).

$\text{M}^{\text{II}}$  being at least one divalent metal element selected from the group consisting of Be, Mg, Ca, Sr, Ba, Ni, Cu, Sn and Cd (Page 2, Par. 19).

$\text{M}^{\text{III}}$  being at least one trivalent metal element selected from the group consisting of Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Al, Ga, and In (Page 2, Par. 19).

X,  $\text{X}'_2$  and  $\text{X}''_3$  are at least One halogen selected from the group consisting of F, Cl, Br and I (Page 2, Par. 19).

Where b, c and z satisfy the following conditions:

$0 \leq b \leq 0.5$ ;  $0 \leq c \leq 0.5$ ; and  $0.0001 \leq z \leq 0.01$  (Page 2, Par. 19).

Regarding claims 5 and 15, Isoda's disclosure of CsBr:Eu (Page 3, Par. 42) as the stimuable phosphor is inherently represented by the formula:  $M^IX : eA$ .

Regarding claims 6 and 16, Isoda discloses the radiation image conversion panel as claimed in claims 2 and 12.

Isoda does not disclose the support exhibiting a temperature within the range of  $150^{\circ}$  to  $350^{\circ}$  C.

Struye discloses that the support on which the phosphor is deposited can be heated up to a temperature of about  $400^{\circ}$  C., (Page 2, Par. 24), which is within the recited range claimed by the applicant,  $150^{\circ}$  to  $350^{\circ}$  C.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Isoda to include a support which can be heated up to a temperature of about  $400^{\circ}$  C such as that taught by Struye in order to perform the chemical vapor deposition.

Regarding claims 9 and 19, Isoda discloses the radiation image conversion panel as claimed in claims 1 and 11, but Isoda does not disclose having a support with more than one layer.

Struye discloses a support (i.e. an amorphous carbon film) coated with an intermediate layer arrangement of a lead or lead compound containing sheet or foil, provided with an aluminum-reflecting layer. Thus, disclosing a support comprising a plurality of layers.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Isoda to include a support with a plurality of layers such as that taught by Struye in order to reach the desired X-Ray absorption and stimulated emission light reflection properties (Page 3, Par. 33).

3. Claims 10 and 20 are rejected under 35 U.S.C. 103(a) as being obvious over Isoda (US Pub. 2003/00364458) in view of Struye et al. (US Pub. 2004/0026632) and in further view of Chen et al. (US Patent 6,396,066).

Regarding claims 10 and 20, Isoda discloses the radiation image conversion panel as claimed in claim 9, but Isoda does not disclose a support comprised of a polyimide layer, carbon layer, and a polyimide layer in that order.

Chen discloses a support comprised of two or more flexible substrates laminated or adhered to each other. Further, Chen teaches that the preferred flexible materials include polymeric films, such as polyethylene terephthalate and polyamides (Col. 2, Line 63). Alternatively, one or more substrates are tinted by the incorporation of conventional dyes such as carbon black, since carbon black absorbs stimulating radiation. Example 1 (Col 8, Line 40) illustrates the preferred support. Two lengths of polyethylene terephthalate film supports (or Polyamides) were mounted onto a roll laminator. The two film supports were set in motion around the rolls and a molten polyethylene was extruded into the nip (between or in the middle), chilled and reformed as a solid, adhering the two polyester supports and forming a laminated structure. The polyethylene used in this instance was tinted black with a concentrated carbon black,

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thus disclosing a support comprised of a polyimide layer, carbon layer, and a polyimide layer in that order.

Isoda, Struye and Chen are analogous art because they all teach radiation image storage panels.

It would have been obvious to modify the combination taught by Isoda and Struye to include the preferred support such as that taught by Chen in order to prevent backscattering by absorbing stimulating radiation (Col.3, Line 4). Therefore, achieving added precision to the radiation image storage phosphor.

### ***Conclusion***

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Djura Malevic whose telephone number is (571) 272-5975. The examiner can normally be reached on Monday – Friday form 9:00 – 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571) 272-24444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Djura Malevic

Patent Examiner

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